Engineering Interactive Computing Systems 2022: Editorial Introduction

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CCS Concepts: • **Human-centered computing**; • **Software and its engineering**;

Additional Key Words and Phrases: Engineering Interactive Systems, Software Engineering, User Interfaces, Design, Formal methods, Verification and Validation, Automation, Visualisation.

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The Engineering Interactive Computing Systems (EICS) track of the Proceedings of the ACM on Human-Computer Interaction (PACM-HCI) is the primary venue for research contributions at the intersection of Human-Computer Interaction (HCI) and Software Engineering. EICS 2022 is the fourteenth edition of the EICS conference, however, our community was the first to organize a scientific gathering to foster and exchange research ideas and contributions on how to engineer the effective interactive aspects of a computing system. In the seventies of the previous century, the Conference on Command Languages explored the emerging primary technologies to interact with computing systems, namely command languages. Since then, this conference has evolved into the Engineering HCI conference, and the same community organized sibling conferences such as CADUI (Computer-Aided Design of User Interfaces), Tamodia (Tasks, Models and Diagrams) and DSV-IS (Design Specification and Verification of Interactive Systems). These separate venues merged into one single ACM SIGCHI sponsored conference in 2010 EICS (see Fig.1). This conference became the primary venue for rigorous contributions, and dissemination of research results, that hold the interconnection between user interface design, software engineering and computational interaction.

EICS 2020, originally planned in Nice (France), was canceled due to the COVID pandemic. Authors of accepted papers were offered the opportunity to present their work at EICS 2021. EICS 2021 was organized as a fully virtual event, originally planned to occur in-person in Eindhoven (The Netherlands). The EICS steering committee then decided to return to Nice (France) for the organization of the next in-person EICS 2022 event.

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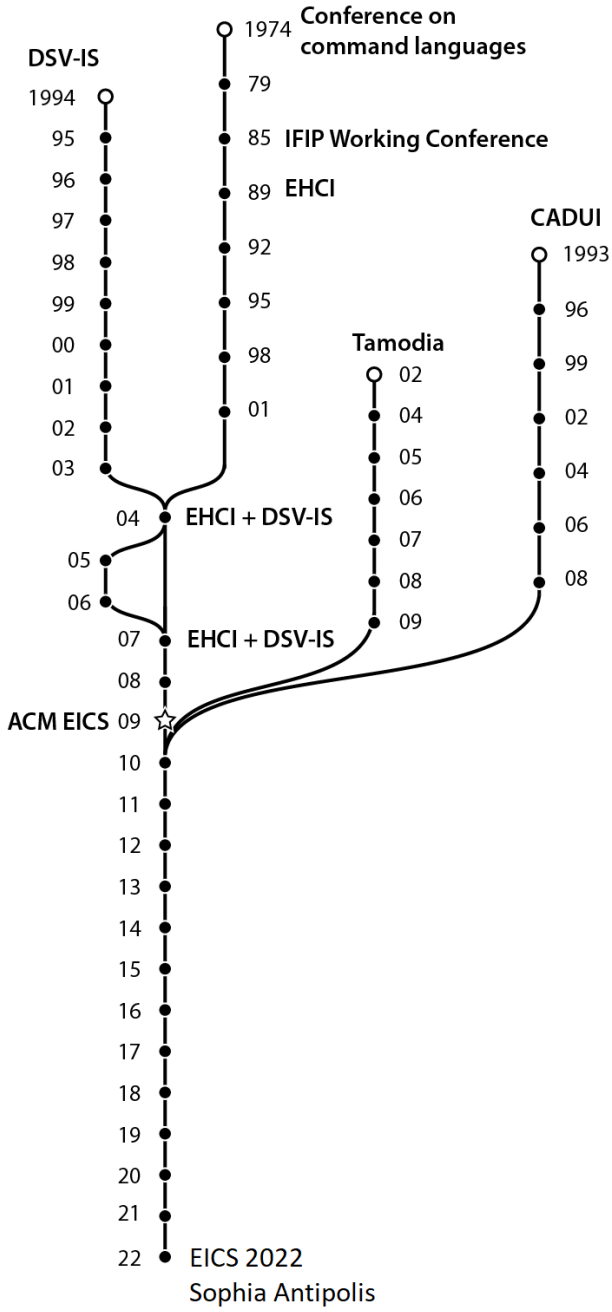

Fig. 1. A graphical view of the history of EICS conference series

For the EICS conference series, we organize the full paper review process as a revise-and-resubmit process supported by the PACM-HCI journal. This process makes it possible for authors to submit a paper to one EICS conference and a revised version to the next one. While this makes the reviewing

process more complex for the programme committee, it offers more flexibility for authors who can spend more time on their revisions and are still ensured that the same Associate Chairs and reviewers will check the revised version, provided that they are available. This process further ensures the publications presented here demonstrate the rigour and detail expected of journal publications. For several years now, we have three separate submissions dates or "rounds": round 1 is in July, round 2 in October and round 3 in February, while the accompanying EICS conference is organized yearly in June. With the support of PACM we can offer both a journal for publications as well as a conference for valuable in-person presentations and discussions about research.

Over the three rounds of submissions for this issue of PACM-HCI we received 93 valid submissions (out of 110 submissions in total), of which we carefully selected 25 papers, bringing our acceptance rate to 26.8%. The result of this selection process is presented in this issue of the Proceedings of the ACM. Work presented at EICS covers all stages of the engineering life-cycle of interactive systems - inception, requirements, design, specification, coding, data analytics, validation and verification, deployment and maintenance. Over time, user interfaces have become much richer and many more aspects came into play. This issue shows once again that EICS embraces such evolutions and includes contributions, among others, on engineering interactive robotic systems, engineering for alternative input modalities such as gestures, tactile, haptics and even brain signals, and engineering interactive augmented and extended reality applications. However, the community does not lose sight of fundamental themes and this issue also presents research that moves the fields of formal methods and model-driven engineering forward. For this edition, we introduced two spotlight domains we wanted to foster: information visualization; since data increasingly becomes a medium for interaction in itself, and automation; an attempt to bring our research community closer to industry and to leverage Artificial Intelligence as part of the engineering cycle.

In addition to the traditional topics of EICS mentioned above, as noted, EICS 2022 identified two spotlights to foster participation and submissions on these specific hot topics for engineering: Automation and Information Visualization. The Spotlight on *Automation* welcomed papers which focus on the Engineering of Interactive partly-autonomous Interactive Computing Systems. Experience reports, case studies and research papers on all these aspects of automation of interactive systems were highly encouraged. The Spotlight on *Information Visualization* welcomed papers which focus on the Engineering of Interactive Information Visualization systems, tools and technologies which employ graphical techniques to present data in an explicit form, as an external artifact, to support decision making. Experience reports, case studies and research papers on the engineering challenges in information visualization were encouraged. Beyond papers which were accepted on these two spotlights, EICS 2022 features a panel entitled "Engineering Awareness in Interfaces: Focus on Automation and Visualization".

We thank the EICS Steering Committee, all the Associate Chairs and external reviewers involved for their incredible work in shaping the selection of full paper contributions in this issue of PACM-HCI.

Kris Luyten and *Philippe Palanque*, EICS 2022 full papers chairs
Aaron Quigley, EICS 2022 technical programme chair
Marco Winckler, EICS 2022 general chair